UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,530	09/10/2003	Koji Iwamitsu	500.43115X00	1958

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MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C.
1800 DIAGONAL ROAD
SUITE 370
ALEXANDRIA, VA 22314

EXAMINER
MASKULINSKI, MICHAEL C

ART UNIT	PAPER NUMBER
2113	

DATE MAILED: 08/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/658,530	IWAMITSU ET AL.
	Examiner	Art Unit	
	Michael C. Maskulinski	2113	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>23 May 2005</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-42</u> is/are pending in the application.

    4a) Of the above claim(s) <u>1-20</u> is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>21-24,26-35 and 38-42</u> is/are rejected.

7)☒ Claim(s) <u>25,36 and 37</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>04 March 2005</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
      application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/10/03, 5/17/05, 3/11/05, 3/10/05, 1/27/05, 1/12/05

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

Non-Final Office Action

Drawings

1.   The drawings were received on March 4, 2005. The Examiner accepts these

drawings.

Claim Objections

2.   Claim 38 is objected to because of the following informalities: in line 8 of claim

38, "a display coupled said controller" should read "a display coupled <u>to</u> said controller".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 21-24, 26-35, and 38-42 are rejected under 35 U.S.C. 102(b) as being

anticipated by Nagata et al., US 2001/0014956 A1.

Referring to claim 21:

a.   In Figure 1, Nagata et al. disclose a plurality of controllers controlling to

transfer data to a plurality of storage regions.

b.　　In Figure 1, Nagata et al. disclose a plurality of data lines coupled to said

controllers and being used to transfer data from said controllers to said storage

regions.

c.　　In paragraph 0101, Nagata et al. disclose that the system configuration

may be displayed on the monitor of a control terminal, which controls the

controller (a display coupled to said controllers and displaying information related

to said storage system).

d.　　In paragraph 0035, Nagata et al. disclose that if either of FC Loops has

failed, another FC Loop can be used to continue communication (wherein a first

controller of said controllers transfers data on a first data line of said plurality of

data lines). Further, in paragraph 0015, Nagata et al. disclose that responsive to

detecting a failure, at least one of the component units commands at least one

the first and second bypass mechanisms to successively disconnect and re-

connect each of the component units to the data communication loop to locate a

cause of the failure (transfers a command on a second data line of said plurality

of data lines, if said storage system has a failure after transferring data on said

second data line, wherein said command is used to obtain an area of said

failure).

e.　　In paragraph 0101, Nagata et al. disclose that the failing unit may be

displayed visually on the monitor (wherein said display displays said area of said

failure).

Referring to claim 22, in paragraph 0094, Nagata et al. disclose a technique in
which each controller searches for a PBC which brings the recovery of the
communication by switching each PBC starting at the farthest PBC from the controller
through the control line (said first controller transfers write data on said first data line
and controls to divide said second data line into a plurality of parts and transfers said
command to one part of said parts of said second data line). In paragraph 0101,
Nagata et al. disclose that the failing unit may be displayed visually on the monitor (said
display displays said area of said failure after second data line is divided).

Referring to claim 23:

a.   In Figure 1, Nagata et al. disclose a first housing having a one or more
first disk drive units of said plurality of disk drives and a first part of said second
line.

b.   In Figure 1, Nagata et al. disclose a second housing having a one or more
second disk drive units of said plurality of disk drive units and a second part of
said second line.

c.   In Figure 1, Nagata et al. disclose one or more controllers coupled to said
first data line and said second data line.

d.   In paragraph 0035, Nagata et al. disclose that if either of FC Loops has
failed, another FC Loop can be used to continue communication (wherein said
first controller transfers write data on said first data line). Further, in paragraph
0015, Nagata et al. disclose that responsive to detecting a failure, at least one of
the component units commands at least one the first and second bypass

mechanisms to successively disconnect and re-connect each of the component

units to the data communication loop to locate a cause of the failure (controls to

disconnect said second part of said second data line from said first part of said

second data line and transfer said command to said first part of said second data

line).

e.   In paragraph 0101, Nagata et al. disclose that the failing unit may be

displayed visually on the monitor (said display displays said area of said failure

after said second part of said second data line is disconnected).

Referring to claim 24, in paragraph 0035, Nagata et al. disclose that if either of

FC Loops has failed, another FC Loop can be used to continue communication (said

first data line is used to read/write data to one or more said disk drive units, if said area

of said failure is on said second data line, and said second data line is used to

read/write data to said one or more said disk drive units, if said area of said failure is not

on said second data line).

Referring to claim 26, in paragraph 0053, Nagata et al. disclose that the

controller as an initiator of the SCSI-FCP can control the ON/OFF state of the bypass

controlling signal to each drive as the target of the SCSI-FCP by issuing Send

Diagnostic Command (said command travels around on said second data line).

Referring to claim 27, in paragraph 0055, Nagata et al. disclose that the

controller can know whether the bypass circuit in the PBC is active or not by issuing the

Receive Diagnostic Result command (said command is relayed by one or more of said

disk drive units coupled to said second data line, if said second data line does not have said failure).

Referring to claim 28, in paragraph 0053, Nagata et al. disclose that the controller as an initiator of the SCSI-FCP can control the ON/OFF state of the bypass controlling signal to each drive as the target of the SCSI-FCP by issuing Send Diagnostic Command (said command is used to initialize said second data line).

Referring to claims 29 and 30, in paragraph 0018, Nagata et al. disclose a storage system having multiple drives and controllers that are connected with a communication loop topology such as FC-AL. Further, the Loop Initialization Primitive (LIP) command is an inherent feature of the FC-AL.

Referring to claim 31, in paragraph 0070, Nagata et al. disclose determining that the FC Loop is failing (said area of said failure is located between said second data line and one of said plurality of disk drive units).

Referring to claim 32, in paragraph 0069, Nagata et al. disclose determining a failure in a disk drive (said area of said failure is in one of said plurality of disk drive units).

Referring to claim 33:

a.   In Figure 1, Nagata et al. disclose a first housing having one or more first disk drive units of said plurality of disk drives and a first part of said plurality of data lines.

b.   In Figure 1, Nagata et al. disclose a second housing having a one or more second disk drive units of said plurality of disk drive units and a second part of said plurality of data lines.

c.   In paragraph 0069, Nagata et al. disclose determining a failure in a disk drive (wherein said area of said failure is in one of said first housing and said second housing).

Referring to claim 34:

a.   In Figure 1, Nagata et al. disclose said first data line is coupled to second controller of said plurality of controllers.

b.   In Figure 1, Nagata et al. disclose said data line is coupled to said first controller of said plurality of controllers.

c.   In paragraph 0053, Nagata et al. disclose that the controller as an initiator of the SCSI-FCP can control the ON/OFF state of the bypass controlling signal to each drive as the target of the SCSI-FCP by issuing Send Diagnostic Command (said first controller controls sending of said command to said second data line).

Referring to claim 35, in Figure 1, Nagata et al. disclose that said plurality of disk drive units are coupled to said first data line and said second data line.

Referring to claim 38:

a.   In Figure 1, Nagata et al. disclose one or more controllers controlling to transfer data to a plurality of storage regions.

b.   In Figure 1, Nagata et al. disclose a plurality of data lines coupled to said

controllers and being used to transfer data from said controllers to said storage

regions.

c.   In Figure 1, Nagata et al. disclose a plurality of disk drives coupled to said

data lines and having said storage regions.

d.   In paragraph 0101, Nagata et al. disclose that the system configuration

may be displayed on the monitor of a control terminal, which controls the

controller (a display coupled to said controller and displaying information related

to said storage system).

e.   In paragraph 0053, Nagata et al. disclose that the controller as an initiator

of the SCSI-FCP can control the ON/OFF state of the bypass controlling signal to

each drive as the target of the SCSI-FCP by issuing Send Diagnostic Command

(wherein a first controller of said controllers relays data on a first data line of said

plurality of data lines and relays a command on a second data line of said

plurality of data lines, if said storage system has a failure after relaying data on

said second data line).

f.   In paragraph 0053, Nagata et al. disclose that the controller as an initiator

of the SCSI-FCP can control the ON/OFF state of the bypass controlling signal to

each drive as the target of the SCSI-FCP by issuing Send Diagnostic Command

(wherein said command is used to initialize said second data line).

g.   In paragraph 0101, Nagata et al. disclose that the failing unit may be displayed visually on the monitor (wherein said display displays an area of said failure).

Referring to claim 39:

a.   In Figure 1, Nagata et al. disclose one or more controllers controlling to transfer data to a plurality of storage regions.

b.   In Figure 1, Nagata et al. disclose a plurality of data lines coupled to said controllers and being used to transfer data from said controllers to said storage regions.

c.   In Figure 1, Nagata et al. disclose a plurality of disk drive units coupled to said data lines and having said storage regions.

d.   In paragraph 0101, Nagata et al. disclose that the system configuration may be displayed on the monitor of a control terminal, which controls the controller (a display coupled to said controller and displaying information related to said storage system).

e.   In paragraph 0035, Nagata et al. disclose that if either of FC Loops has failed, another FC Loop can be used to continue communication (wherein a first controller of said controllers relays data on a first data line of said plurality of data lines). Further, in paragraph 0015, Nagata et al. disclose that responsive to detecting a failure, at least one of the component units commands at least one the first and second bypass mechanisms to successively disconnect and re-connect each of the component units to the data communication loop to locate a

cause of the failure relays a command on a second data line of said plurality of data lines, if said storage system has a failure after relaying data on said second data line, wherein said command is used to initialize said second data line).

f.   In paragraph 0101, Nagata et al. disclose that the failing unit may be displayed visually on the monitor (wherein said display displays said area of said failure).

Referring to claim 40:

a.   In Figure 1, Nagata et al. disclose a plurality of controllers controlling to transfer data to a plurality of storage regions.

b.   In Figure 1, Nagata et al. disclose a plurality of data lines coupled to said controllers and being used to transfer data from said controllers to said storage regions.

c.   In Figure 1, Nagata et al. disclose a plurality of disk drive units coupled to said data lines and having said storage regions.

d.   In paragraph 0035, Nagata et al. disclose that if either of FC Loops has failed, another FC Loop can be used to continue communication (wherein a first controller of said controllers transfers data on a first data line of said plurality of data lines). Further, in paragraph 0015, Nagata et al. disclose that responsive to detecting a failure, at least one of the component units commands at least one the first and second bypass mechanisms to successively disconnect and re-connect each of the component units to the data communication loop to locate a cause of the failure (transfers a command on a second data line of said plurality

of data lines, if said storage system has a failure after transferring data on said

second data line, wherein said command is used to obtain an area of said

failure).

Referring to claim 41:

a.   In Figure 1, Nagata et al. disclose a plurality controllers controlling to

transfer data to a plurality of storage regions.

b.   In Figure 1, Nagata et al. disclose a plurality of data lines coupled to said

controllers and being used to transfer data from said controllers to said storage

regions.

c.   In Figure 1, Nagata et al. disclose a plurality of disk drive units coupled to

said data lines and having said storage regions.

d.   In paragraph 0101, Nagata et al. disclose that the system configuration

may be displayed on the monitor of a control terminal, which controls the

controller (a display coupled to said controller and displaying information related

to said storage system).

e.   In paragraph 0035, Nagata et al. disclose that if either of FC Loops has

failed, another FC Loop can be used to continue communication (wherein data

are relayed by a first controller of said controllers on a first data line of said

plurality of data lines). Further, in paragraph 0015, Nagata et al. disclose that

responsive to detecting a failure, at least one of the component units commands

at least one the first and second bypass mechanisms to successively disconnect

and re-connect each of the component units to the data communication loop to

locate a cause of the failure (a command is relayed by the first controller on a second data line of said plurality of data lines, if said storage system has a failure after relaying data on said second data line, wherein said command is used to obtain an area of said failure).

f.   In paragraph 0101, Nagata et al. disclose that the failing unit may be displayed visually on the monitor (wherein said display displays said area of said failure).

Referring to claim 42:

a.   In Figure 1, Nagata et al. disclose one or more controllers controlling to transfer data to a plurality of storage regions.

b.   In Figure 1, Nagata et al. disclose a plurality of data lines coupled to said controllers and being used to transfer data from said controllers to said storage regions.

c.   In Figure 1, Nagata et al. disclose a plurality of disk drive units coupled to said data lines and having said storage regions.

d.   In paragraph 0101, Nagata et al. disclose that the system configuration may be displayed on the monitor of a control terminal, which controls the controller (a display coupled to said controller and displaying information related to said storage system).

e.   In Figure 1, Nagata et al. disclose transferring data on a first data line of said plurality of data lines coupled to a first controller of said controllers.

f.   In paragraph 0070, Nagata et al. teach having a failure between said first

data line and one of said disk drives after said transferring data on said first data

line).

g.   In paragraph 0035, Nagata et al. disclose that if either of FC Loops has

failed, another FC Loop can be used to continue communication (transferring

data on a second data line of said plurality of data lines by said first controller

after having said failure). Further, in paragraph 0015, Nagata et al. disclose that

responsive to detecting a failure, at least one of the component units commands

at least one the first and second bypass mechanisms to successively disconnect

and re-connect each of the component units to the data communication loop to

locate a cause of the failure (transferring a command on said first data line by

said first controller, said command being used to obtain a position of said failure).

h.   In paragraph 0101, Nagata et al. disclose that the failing unit may be

displayed visually on the monitor (displaying said position of said failure on said

display).

Allowable Subject Matter

5.   Claims 25, 36, 37, are objected to as being dependent upon a rejected base

claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims.

Conclusion

6.   The prior art made of record and not relied upon is considered pertinent to
applicant's disclosure. The cited prior art is related to different means of isolating
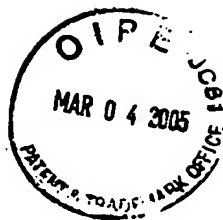failures and handling failures in a storage system with redundant loops.

Any inquiry concerning this communication or earlier communications from the
examiner should be directed to Michael C. Maskulinski whose telephone number is
(571) 272-3649. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's
supervisor, Robert W. Beausoliel can be reached on (571) 272-3645. The fax phone
number for the organization where this application or proceeding is assigned is 703-
872-9306.

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you have questions on access to the Private PAIR system, contact the Electronic
Business Center (EBC) at 866-217-9197 (toll-free).

MM

ROBERT BEAUSOLIEL
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

FIG.2